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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 11

Application Number: 09/363,456
Filing Date: July 29, 1999
Appellant(s): BENMAN

William J. Benman
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed April 21, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1, 3-12 and 14-20 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,366,316	PARULSKI	4-2002
5,706,417	ADELSON	1-1998
4,827,344	ASTLE et al.	5-1989

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-12, 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paruski et al. (#6,366,316 B1) in view of Adelson (#5,706,417).

As per claim 1, and similar claim 17, Parulski teaches the claimed "system for transplanting an image from a first scene to a second scene" comprising:

first means for providing image data (Parulski, col. 4, lines 38-41);

second means responsive to said first means for storing a first frame of image data consisting of a heterogeneous background scene (Parulski, figure 5 -- element 18). It is noted that Parulski does not explicitly disclose a heterogeneous as claimed; however, Parulski's background 18 is analogous to Applicant's a heterogeneous background. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a heterogeneous background scene so the users can have more choice to select a background that they want for the display image.

third means responsive to said first means for providing a second frame of image data consisting of a second scene having said background scene at least partially obscured by a foreground object (Parulski ,col. 2, lines 38-56); and

fourth means responsive to said second and third means for processing said second frame to extract an image of said object independent of said background scene (Parulski, fig. 1, element 22), said fourth means including: said fourth means includes means for comparing picture elements of said second frame to corresponding picture elements in said first frame (zero value, col. 6, lines 8-11 and means for outputting said corresponding picture elements in said second frame if the result of the comparison is a predetermine value (unity value, col. 6, lines 12-15) which Adelson teaches col. 6, lines 8-14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a comparing means for comparing picture element in order to decide whether if the desired picture will be outputted.

As per claims 3, and a similar claim 8 "means for inserting said image of said foreground object into a third scene" (Parulski, fig. 1, element 32).

As per claim 4, and a similar claim 9 "said third scene is computer generated" which Adelson teaches in col. 13, lines 39-63. It would have been obvious to one of ordinary skill in the art at the time the invention was made to generate the third scene by computer in order to develop a 3D model of the real moving object.

As per claim 5, and a similar claim 10, "wherein said first scene is static" which Adelson teaches in col. 4, line 23.

As per claim 6, and a similar claim 11 "wherein said first scene is dynamic" which Adelson teaches in col. 10, lines 49-50.

Claim 7 is similar to claim 1, except for the steps of: fifth means for processing said difference frame to provide a template, said fifth means including means for differentiating said filtered image to provide said template and sixth means for multiplying said second frame by said template to extract an image consisting essentially of said foreground object which Parulski teaches in the processing steps are used to create a suitable foreground mask, col. 3, lines 27-52.

As per claims 12, wherein said fifth means includes means for filtering said difference frame and differentiating said filtered image which Paruski teaches in col. 5, lines 28-67.

As per claims 14-16, wherein means for differentiating provide an outline, said fifth means includes means for filling said outline with a value, and said value is logical "1" which Adelson suggests in col. 5, line 65-col. 6, line 14.

As per claim 18, wherein said means for outputting said corresponding picture elements includes means for logically gating picture elements in said current frame in response to the output of said means for comparing (Paruski, col. 3, line 53-col. 4, line 31).

Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paruski et al. (#6,366,316 B1) in view of Adelson (#5,706,417) and further in view of Astle et al. (#4,827,344).

As per claim 19, herein said means for logically gating includes means for logically ANDing corresponding picture elements in said second frame with the output of said for comparing (Astle, col. 2, line 66-col. 3, line 25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include logically ANDing means because Paruski picks out the foreground image 12' from a foreground mask and the image containing foreground and backgound image must use logical ANDing gate operation.

As per claim 20, wherein said means for logically gating includes means for logically ANDing corresponding picture elements in said second frame with an inverted output of said means for comparing (Astle, col. 2, line 66-col. 3, line 25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include logically ANDing means because Paruski picks out the foreground image 12' from a foreground mask and the image containing foreground and backgound image must logical ANDing gate operation.

(11) Response to Argument

1. Appellant argues that "Parulski's system differs from the claimed invention in that it uses neither pixel-by-pixel comparison nor differentiation which is not correct because Parulski's foreground mask at step 24 is the result of the comparison of picture elements of said second frame to the corresponding picture elements in the first frame.

Appellant argues that Parulski's differencing step is not equivalent to the claimed "step of comparison", which is correct, but Parulski does more than just take the

difference between two frames on a pixel-by-pixel basic. In figure 5, Parulski shows that the difference between two frames goes further in process to yield the foreground mask. The main issue here is whether a combination of Parulski's steps (e.g., figure 2) including the differencing step and the LUT applying step constitutes the claimed "comparison step." Appellant's figure 1 shows what is the claimed comparison step: first the difference (subtractor 22) between the background image and the foreground image is taken (Appellant, page 6, lines 4-9) (which is equivalent to Parulski's subtractor 70); then difference goes through the processors 24, 26, and 28 for removing all the noise and distortion to yield the template (Appellant, page 6, lines 10-15) (which is equivalent to Parulski's foreground mask); and finally, the foreground image is picked up by multiply the template with the foreground image (Appellant, page 6, lines 15-16) (which is equivalent to Parulski's foreground image 12', column 2, lines 46-47). At Table II (page 8 of the Brief), Appellant gives an example of a result of comparison used in Appellant's application, which is exactly identical to the result of the foreground mask in Parulski's figure 5. Therefore, the combined of differencing and LUT applying steps in Parulski's figure 2 teaches the claimed "means for comparing picture elements of said second frame to corresponding picture elements in said first frame."

2. Appellant argues that Parulski's system does not teach "selectively outputting picture elements in the current frame based on the result of comparison" which is not correct because Parulski's foreground image 12' is generated based on the foreground mask or the result of comparison. Appellant's result of comparison is the

template (Appellant, page 6, lines 12-15), which is equivalent to Parulski's foreground mask (column 2, lines 44-46). Appellant's claimed step of "selectively outputting picture elements in the current frame based on the result of comparison" is supported by the language "the template is multiplied by the foreground image to provide an output image" (Appellant's disclosure, page 6, lines 15-16) which is equivalent to Parulski's disclosure (the foreground mask 22 is used to extract a foreground image 12' from the foreground image 12; column 2, lines 46-48). Therefore, Parulski's generation of the foreground image 12' from the foreground mask 22 teaches the claimed "selectively outputting picture elements in the current frame based on the result of comparison."

3. For claim 7, Appellant argues that the cited references do not teach "means for differentiating said difference frame to provide said template" which is not correct. We have Appellant's difference frame outputted from the subtractor 22 (disclosure, page 6, lines 4-10) is equivalent to Parulski's difference frame outputted from the subtractor 70 (figure 2); then we have Appellant's template outputted from the differentiator 26 (disclosure, page 6, lines 10-15) is equivalent to Parulski's foreground mask outputted from the means 71 for applying LUT to difference image (column 3, lines 53-66). Therefore, Parulski's generation of foreground mask (figure 2) teaches the claimed "means for differentiating said difference frame to provide said template".

4. Since the Application 09/363,771 has been abandoned, the issue of conflicting between the claims of this present invention and the claims of Application 09/363,771 is deemed to be moot.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yang et al. (US 5923380) teach a digital processing method of replacing an original background of a visible light image of a scene with a predetermined replacement background. In particular see column 2, lines 11-16 which teaches comparing by subtracting or differencing.

Saunders et al. (US 5363146) teach a method of motion compensated image processing in which motion vectors are generated to represent image motion between a pair of input images from which an output image is to be derived by motion compensated interpolation. In particular see column 7, lines 24-38 which teaches comparing by subtracting or differencing.

MacDonald et al. (US 511286) teach a method of generating a control data array from an image represented by digital data defining the colour content of pixels of the image in terms of first colour components defining a first colour space. In particular see column 6, lines 18-22 which teaches comparing by subtracting or differencing.

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